

Listing of Claims:

Claims 1-5 (canceled)

6. (currently amended) A method for preparing a porous acicular mullite composition having an improved thermal shock factor, the method comprising,

a) forming a mixture of one or more precursor compounds having the elements present in mullite and a property enhancing compound comprising talc.

b) shaping the mixture into a porous green shape,

c) heating the porous green shape of step (b) under an atmosphere having a fluorine containing gas and to a temperature sufficient to form a mullite composition comprised substantially of acicular mullite grains that are essentially chemically bound, wherein an element of the property enhancing compound is incorporated into a glassy grain interface phase of the porous acicular mullite composition.

7. (previously presented) The method of Claim 6 wherein the property enhancing compound is talc.

8. (currently amended) A method for preparing a porous acicular mullite composition having an improved thermal shock factor, the method comprising,

a) forming a mixture of one or more precursor compounds having the elements present in mullite and a property enhancing compound, wherein the property enhancing compound is comprised of a first property enhancing compound having an element selected from the group consisting of Ce, B, Fe and Nd, and a second property enhancing compound having an element selected from the group consisting of Mg, Ca, Pr, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, Sc, La and combination thereof,

b) shaping the mixture into a porous green shape,

c) heating the porous green shape of step (b) under an atmosphere having a fluorine containing gas and to a temperature sufficient to form a mullite composition having a

porosity of about 40% to 85% that is comprised substantially of acicular mullite grains that are essentially chemically bound.

9. (previously presented) The method of Claim 8 wherein the element of the second property enhancing compound is Mg, Ca, Y or combination thereof.

10. (previously presented) The method of Claim 9 wherein the first and second property enhancing compound are selected from the group consisting of oxides, nitrates, acetates and combinations thereof.

11. (currently amended) A method for preparing a porous acicular mullite composition having an improved thermal shock factor, the method comprising,

a) forming a mixture of one or more precursor compounds having the elements present in mullite and a property enhancing compound, the property enhancing compound containing an element selected from the group consisting of Mg, Ca, Fe, Na, K, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, B, Y, Sc, La and combination thereof.

b) shaping the mixture into a porous green shape,

c) heating the porous green shape of step (b) under an atmosphere having a fluorine containing gas and to a temperature sufficient to form a mullite composition is comprised substantially of acicular mullite grains that are essentially chemically bound and said mullite composition has a ratio of Nd/Mg from about 0.1 to about 10 by weight.

Claims 12-32 (canceled)

33. (currently amended) A method for preparing a porous acicular mullite composition having an improved thermal shock factor, the method comprising,

a) forming a mixture of one or more precursor compounds having the elements present in mullite and a property enhancing compound, the property enhancing compound containing an element selected from the group consisting of Mg, Ca, Fe, Na, K, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, B, Y, Sc, La and combination thereof.

b) shaping the mixture into a porous green shape,

c) heating the porous green shape of step (b) under an atmosphere having a fluorine containing gas and to a temperature sufficient to form a mullite composition comprised substantially of acicular mullite grains that are essentially chemically bound and said mullite composition has a ratio of Fe/Mg from about 0.5 to about 1.5 by weight the Fe and Mg being present as oxides.

34. (previously presented) The method of Claim 33, wherein the Fe and Mg are present in an amorphous oxide glassy phase.

35. (new) The method of Claim 8, wherein an element of the property enhancing compound is incorporated into a glassy grain interface phase of the porous acicular mullite composition.

36. (new) The method of Claim 11, wherein an element of the property enhancing compound is incorporated into a glassy grain interface phase of the porous acicular mullite composition.

37. (new) The method of Claim 33, wherein an element of the property enhancing compound is incorporated into a glassy grain interface phase of the porous acicular mullite composition.